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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,037	08/09/2001	Hwan-Chul Rho	P56539	2495

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EXAMINER	
PERRY, ANTHONY T	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	09/925,037	RHO ET AL.	
	Examiner	Art Unit	
	Anthony T. Perry	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,33-37 and 39-51* is/are pending in the application.

4a) Of the above claim(s) *10-17,50 and 51* is/are withdrawn from consideration.

5)☒ Claim(s) *3,7-9,33-37,39-41 and 44-49* is/are allowed.

6)☒ Claim(s) *1,2,4-6,42 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 August 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

The Amendment, filed on 4/11/05, has been entered and acknowledged by the Examiner.

Claims 21-32 and 38 have been cancelled.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-6, and 42-43 are rejected under 35 U.S.C. 102(e) as being anticipated by and alternatively under 35 U.S.C. 103(a) as being obvious over Yamauchi et al. (US 6,351,061).

Regarding claims 1-2 and 42-43, Yamauchi teaches a cathode comprising a base metal 2 and an electron emissive material layer 3 attached on the base metal 2 (Fig. 1). Yamauchi teaches that the electron emissive material layer 3 includes a surface roughness measured from a distance between a highest point and a lower point of the surface of the electron emissive material layer being at most 15 microns (col. 5, lines 15-19). This range includes the range of

not more than 5 microns. Yamauchi further teaches that if the difference between the highest and lowest point is 10 microns or less that an even better current density distribution can be obtained, anticipating that a cathode having a smaller surface roughness would exhibit even better current density distribution (col. 5, lines 20-22).

Since the Yamauchi reference teaches that a difference between the highest and lowest point of not more than 10 microns provides a cathode having a better current density distribution than one having a surface roughness of not more than 15 microns, one of ordinary skill in the art would have found it obvious to provide a surface roughness less than not more than 10 microns (including "a maximum of not more than 8", "a maximum of not more than 5 microns", "a maximum value of 8", "a maximum value of 5 microns", and "a maximum...being from 5 to 8 microns").

Regarding claim 4, Yamauchi teaches that the thickness of the electron emissive material layer is 70 microns (col. 4, lines 45-49). A prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Court held as proper a rejection of a claim directed to an alloy of "having 0.8% nickel, 0.3% molybdenum, up to 0.1% iron, balance titanium" as obvious over a reference disclosing alloys of 0.75% nickel, 0.25% molybdenum, balance titanium and 0.94% nickel, 0.31% molybdenum, balance titanium.).

Regarding claim 5, the Examiner notes that the claim limitation that "the electron emissive material layer being attached on said base metal by one method selected from the group consisting essentially of printing and deposition" is drawn to a process of manufacturing which is

incidental to the claimed apparatus. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is made. Rather, is the product itself which must be new and not obvious. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113). Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the electron emissive material layer disclosed by Yamauchi is at least a fully functional equivalent to the Applicant's claimed electron emissive material layer as evidenced by Yamauchi's suggestion of all of the Applicant's claimed structural limitations.

Regarding claim 6, the Examiner notes that the claim limitation that "the electron emissive material layer being attached on said base metal by a screen printing method " is drawn to a process of manufacturing which is incidental to the claimed apparatus. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is made. Rather, is the product itself which must be new and not obvious. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (see MPEP 2113).

Therefore, it is the position of the examiner that it would have been obvious to one of ordinary skill in the art that the electron emissive material layer disclosed by Yamauchi is at least a fully functional equivalent to the Applicant's claimed electron emissive material layer as evidenced by Yamauchi's suggestion of all of the Applicant's claimed structural limitations.

Allowable Subject Matter

Claims 3, 33-37, and 44-49 are allowed.

The following is a statement of reasons for allowance: the references of the prior art of record fails to teach or suggest the combination of the limitations as set forth in claims 3 and 44, and specifically comprising the limitation of the electron emissive material layer having a density of 2 to 5 mg/ mm^3. The best prior art of record teaches that the density of the electron emissive material layer is 0.8 mg/mm^3.

Claims 7-9 and 39-41 are allowed due to their dependency status from base claim 3 which is allowed.

Regarding claims 34-35 and 45-46, the prior art does not specifically state the size of the pores, and therefor fails to teach or suggest the combination of the limitations as set forth in claims, specifically comprising the limitation of the pores between the oxide particles being no greater than 8 microns.

Claims 36-37 and 49 depend from claim 35.

Claim 48 depends from claim 45.

Regarding claims 33 and 47, the references of the prior art of record fails to teach or suggest the combination of the limitations as set forth in claims 33 and 47, and specifically comprising the limitation of the oxides particles being of uniform size. The prior art of record

only teaches an average particle size of 10 microns and does not specifically state that the particles have equal sizes.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee, and to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant's arguments filed 4/11/05, with respect to the rejection of claims 1, 2, 4, 5, and 6 under 35 U.S.C. 102(e) as being anticipated by Yamauchi et al. (US 6,351,061) have been fully considered but are not persuasive.

In response to the argument that the Yamauchi reference does not anticipate the ranges of rough layer being 8 or less and 5 or less microns, the examiner disagrees. As stated above the Yamauchi reference specifically states that the range of the rough layer is 15 or less and more preferably 10 or less microns and therefore anticipates the claimed narrower ranges. The Examiner agrees that no specific examples falling within the claimed ranges are disclosed, and that a case by case determination must be made as to anticipation.

The MPEP § 2131.03 states "In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it

may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims."

Although the specification of the current application teaches that the range be 8 or less and more preferably 5 or less microns, it does not provide evidence of any unexpected results within the claimed narrower range **compared to the range of 10 or less microns**. Accordingly, the narrower ranges are considered to be disclosed with "sufficient specificity", therefore, the claimed ranges are anticipated by Yamauchi.

With regards to the arguments regarding claims 5-6, the MPEP 2113 states, "The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g., In re Garnero, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979) (holding "interbonded by interfusion" to limit structure of the claimed composite and noting that terms such as "welded," "intermixed," "ground in place," "press fitted," and "etched" are capable of construction as structural limitations.)"

The MPEP lists process terms and simply states that such terms "are capable of construction as structural limitations." It is the position of the Examiner that the claimed product can be defined by process steps other than process steps claimed, including the process steps taught by Yamauchi. The claimed manufacturing process steps are not found to impart structural characteristics to the final product different than the final product as disclosed by Yamauchi. The Examiner agrees that certain process steps may lead to a differently structured final product

and in which case are considered patentable. However, the Applicant has not provided teachings to suggest that such a differently structured product, as compared with the product disclosed by Yamauchi, is produced.

The MPEP states, "PRIOR ART WHICH TEACHES A RANGE WITHIN, OVERLAPPING, OR TOUCHING THE CLAIMED RANGE ANTICIPATES IF THE PRIOR ART RANGE DISCLOSES THE CLAIMED RANGE WITH "SUFFICIENT SPECIFICITY" When the prior art discloses a range which touches, overlaps or is within the claimed range, but no specific examples falling within the claimed range are disclosed, a case by case determination must be made as to anticipation. In order to anticipate the claims, the claimed subject matter must be disclosed in the reference with "sufficient specificity to constitute an anticipation under the statute." What constitutes a "sufficient specificity" is fact dependent. If the claims are directed to a narrow range, the reference teaches a broad range, and there is evidence of unexpected results within the claimed narrow range, depending on the other facts of the case, it may be reasonable to conclude that the narrow range is not disclosed with "sufficient specificity" to constitute an anticipation of the claims. The unexpected results may also render the claims unobvious. The question of "sufficient specificity" is similar to that of "clearly envisaging" a species from a generic teaching. See MPEP § 2131.02. A 35 U.S.C. 102 /103 combination rejection is permitted if it is unclear if the reference teaches the range with "sufficient specificity."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to *Anthony Perry* whose telephone number is **(571) 272-2459**. The

examiner can normally be reached between the hours of 9:00AM to 5:30PM Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel, can be reached on (571) 272-24597. **The fax phone number for this Group is (703) 872-9306.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Perry
Patent Examiner
Art Unit 2879
July 11, 2005

7/11/05
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